

ABSTRACT OF THE DISCLOSURE

A new class of composite polymer films where the refractive index can be varied by simple compressive or extensive forces. The films are comprised of alternating layers of an elastomer and a glassy polymer or two different elastomers. When the layer spacing is much less than the wavelength of the probe light, these materials behave as effective medium composites. The layer thickness of the elastomer component and thus the effective index of the composite can be varied by compression, tension or shear.